DIRECTORATE GENERAL BORDER ROADS

GENERAL MAINTENANCE INSTRUCTION NO – 199

ON

L&T VIBROMAX TANDEM VIBRATOR ROLLER

W-752

1. **INTRODECTION**

1.1 L&T vibromax model W-752 having dual drum tandem vibratory roller are self-propelling compactor for each works /bituminous macadam. The eqpt is fitted with 4 cylinders Kirloskar HA-494 diesel engine having 78 HP at 2500 rpm which provides power to hydraulic system for the travel drive, vibration of roller and steering system au a constant speed. Compaction is achieved by the vibration of the drums. These rollers have dual drums, capable of vibrating independently or together.

1.2 These instructions are issued as guide lines for general and scheduled maintenance, lubrication and safety precaution to be taken when operating these road rollers. In case of doubt, please refer opration and maintenance manual issued along with the machine.

2. ACTION

2.1 USER UNITS:- To carry out Maintenance schedule and oil change etc as per periodicity laid down by mobile maintenance team or as per team detailed by the Task Forces and also follow safety precautions for optimal utilization.

2.2 FIELED WORKSHOP (GREF)

2.2.1 To carry out and monitor, maintenance schedule and oil changes etc as per periodicity laid down by this instructions.

2.2.2 To advise user units in respect of any lapses noticed.

3. DETAILS

3.1 The details of maintenance, fuel, lubricants and safety precautions are as under:-

3.1.1 General maintenance and safety precautions. - Appx ‘A’

3.1.2 Fuels, oils and lubricants - Appx ‘B’

3.1.3 Periodical maintenance - Appx ‘C’

4. Please acknowledge receipt.

Appendix ‘A’ to GMI No-199

GENERAL MAINTENANCE AND SAFETY PRECAUTIONS

1. GENERAL

1.1. Careful maintenance of this machine ensures maximum reliability and prolongs the service life of important components. The work involved is small compared to the problems, which may occur, if these instructions are not observed.

1.2. Clean the machine and engine thoroughly after completion of days work and before carry out any maintenance works.

1.3. Make sure that the machine is on a level ground and on a firm base, when the maintenance work is being carried out and it should be done with engine shut down.

1.4. De-pressures hydraulic hose before any repair work is being done / undertaken to avoid accident.

1.5 Disconnect battery and cover it with insulating material or remove before performing work on electrical components of the machine.

1.6 The terms “R/L” are always referred to the direction of travel.

SAFETY PRECAUTION

1. GENERAL

1.1 Make sure that you are familiar with all the accessories of your machine.

1.2 Do not drive the roller until you ate fully familiar with all the operating and control levers and know precisely how your machine works.

1.3 Wear protective clothing such as safety helmet, safety shoes and gloves.

1.4 Familiarizes yourself with the area where you will be working.

1.5 Note where the fire extinguishers and first aid box are located and how they are used.

1.6 Only use the roller for the purpose it is intended.

1.7 **CAUTION: -** Keep away from the machine’s articulation area when the engine is running.

Apendix ‘A’ to GMI No 199

2. PRIOR TO THE START

2.1 Check the machine for any obvious faults.

2.2 Do not drive the machine if any instruments control lights or control elements are defective.

2.3 All protective devices must be properly secured.

2.4 Do not take any loose objects with you or, if you do, secure these to the machine or the cab.

2.5 Keep the machine free of all oily or combustive materials.

2.6 Before climbing into the machine, make sure that there are no person or obstacles near or under the machine.

2.7 Take care when climbing into the machine (use the steps and hand rails).

2.8 Adjust your seat before starting the engine.

3. STARTING

3.1 All control levers must be in neutral position before starting the engine.

3.2 Only start the engine from the operator's seat.

3.3 Check all indicators after starting engine to make sure that everything is functioning correctly.

3.4 Do not leave the machine unattended with the engine in running condition.

3.5 When starting with the help of another battery connect positive point to positive and negative point to negative. Always connect the earth wire (negative) last and disconnected it first.

3.6 CAUTION :- Exhaust gases are toxic, always ensure an adequate supply of fresh air when starting the engine in indoors.

4. OPERATION

4.1. Before setting off machine for work, check all controls, lighting and horn for proper working.

4.2. Match the speed of the engine to the operating conditions.

4.3. Keep away from edges and slopes.

4.4. Switch on lighting, if visibility is poor.

4.5. Always drive with due care on slopes and always directly up or down the slope (never at an angle) Always shift to the lower travel speed range when approaching the slope.

4.6 Change the direction of travel by bringing the machine to rest.

4.7 When driving the machine in reverse direction, check there is no person or obstacle in the way.

4.8 Do not try to climb into the when it is moving.

4.9 Do not use the machine to transport persons.

4.10. Watch out for unusual noises or smoke when operating the machine.

4.11. Do not switch on the vibration, when the machine is on highly compacted material such as asphalt or concrete.

5. PARKING

5.1. Before leaving the machine, shift the control lever to “Neutral” apply the parking brake off the engine.

5.2 If possible park the machine on a level and firm ground.

5.3 If have to park the machine on a gradient, position your machine at a right angle to the slope and put wedges under the drums or wheels.

5.4 Never jump from the machine, but always use the access steps and hand rules.

6. MAINTENANCE

6.1 Make sure that the machine is on flat, firm bases when carrying out repair and maintenance work.

6.2 When working on the machine secure the articulated joint with the brace.

6.3 Attach a warning sign to the steering wheel if the machine is defective.

6.4 Before starting work, check that all drums or wheels are locked in position and that the battery is disconnected.

6.5 Check connection and fittings for leaks once all works have been completed.

6.6. Wipe away any fuel or oil which has been spilled on the machine.

6.7. Do not smoke when filling the tanks or checking the level of acid in the battery.

6.8. Never check the level of acid of the battery, or the fuel with a naked flame.

6.9. Be careful with cleaning agents, gasoline or other easily inflammable substances must never be used for cleaning purposes.

6.10 There is a danger of scalding if the engine oil or hydraulic oil is drained at operating temperature.

6.11 Never set pressure relief valve above the specification.

The details are as under:-

1st stage	15 to 350 bar (217 to 5075 PSI)
2nd stage	15 to 350 bar (217 to 5075 PSI)
Charge pressure	20 bar (290 PSI)
Hydraulic Steering System	140 bar (2030 PSI)

Appendix 'B' to GMI No-199

FUELS, LUBRICANTS AND CAPACITIES

Assembly	Fuel / lubricants	
	Summer	Winter
Engine oil	SAE-30	SAE-10W
	$+5^0$C to 3^0C SAE-40 ($+25^0$C to $+ 4^0$C)	(- 5 ^{0}to -20^0 C) 14* SAE 20W/20 12* ($+10^0$C to -10^0C
Fuel	Diesel HSD	(Winter grade diesel (DSZ) Diesel fuel down to -12^0C
Hydraulic System	Hydraulic oil IOC Grade	SERVO SYSTEM HLP -100
Vibration bearing	SP-150/100, PARATHON-150/HP	ULPHA SP -150/CASTROL 5 Liter/ side
Drive shaft travel bearing articulated joint	High pressure grease, servo grease	(Lithium soap) as required
NOTE :- ONLY MULTIGRADE OIL (LUBRICANT) TO BE USED.		
* Initial filling in liters ** Oil change (without filter)		

Appendix ‘C’

PERIODICAL MAINTENANCE

MAINTENANCE TASK (EVERY 8- 10 OPERATIONS HOURS/ DAILY)

1.1 Check engine oil level and top up if required.

1.2 The service life of the filter cartridge in the air filter depends on correct removal of dust by discharge valve. If discharge valve is jammed or clogged the cartridge gets clogged quickly due to excessive dust, squeeze the dust discharge valve clean discharge slots.

1.3 Removed filter bowl with strainer and clean.

1.4 Check hydraulic oil level.

1.5 Fill diesel tank after day’s work to avoid condensation of water (capacity 185 Ltrs)

1.6 Dirt tends to accumulate on the engine cooling fins where surface gets contaminated with oil or fuel. If contamination is oily spray the engine with diesel oil or cold cleaning agent and clean it, with a water jet after allowing an adequate soaking time

1.7 Check air intake system for leakage.

1.8 Check visual inspection for damage.

1.9 Check position of front and rear scrapers and adjust the scraper until it just touches the surface of the drum.

1.10 Check lighting system.

1.11 Check electrically operated monitoring equipment/gauge for correct functioning, which are fitted on the panel. Example engine temperature gauge and water temperature gauge.

1.12 Check indicator and warning lamps of right instrument panel which are the monitoring gauge/device fitted for correct reading / indication.

NEAR SIDE INSTRUMENT PANEL

(RIGHT SIDE)

(a) Hour meter

(b) Engine temp gauge

(c) Battery charge warning lamps.

(d) Brake indicating lamps

(e) Engine oil pressure lamps

(f) Hydraulic oil pressure lamps

(h) Water level indicating lamps

(j) Engine temp lamp

(k) Neutral start lamp

OFF SIDE INSTRUMENT PANEL

(LEFT SIDE)

(a) Front & Rear vibrator lamp

(b) Front Vibrator lamp

(c) Rear Vibarater lamp

(d) Rear level indicator lamp

(e) Water temp gauge

MAINTENANCE TASK (EVERY 50 OPERATING HOURS/ WEEKLY)

2.1 Carry out 10 operating hours maintenance tasks.

2.2 Air cleaner filter to be cleaned and fitted

2.3 Check the hand brake lever and adjust if necessary. To adjust loosen counter nut and tension the brake cable using the hexagon nut on the brake lever until the brake engages after 3to 4 notches. Adjust the lining first and then the hand brake.

2.4 Greasing of the travel bearings :- 752 Tandem Vibratory roller has only grease nipples on the Vibration side. Clean the grease nipple and lubricate with approx 10 shots from grease gun.

2.5 Grease steering cylinder bearing (4 points)

2.6 Clean outside of battery

2.7 Check acid level of battery of required top up with distilled water only .

2.8 Apply mineral jelly coat to the cable terminal to prevent corrosion . Do not apply grease. Clean vent holes of the plugs of battery for free ventilation.

2.9 Battery mounting to be checked for rigidity.

2.10 Check oil level in transfer case.

MAINTENANCE TASK (EVERY 100 OPERATING HOURS)

3.1 Carry out 10 and 50 operating hours tasks.

3.2 Clean cooling system.

3.3 In case of 'AIR LOCK' bleed the fuel system to remove air

3.4 Clean the water sprinkler pump filter both front rear and refit it.

3.5 The limit of exacter speed i.e. vibration Frequency is minimum 33.3 Hz (2000 rpm)

Position the roller on elastic surface (rubber tyres) and operate the brake, place frequency meter tightly on the outside of the case of the front drum. Select low frequency Vibration (33 Hz) and switch on the frequency switch. Note the frequency re4ading on the meter and adjust as required. Select high frequency 50 Hz and switch on the frequency. Note frequency reading on the meter and adjust as required. Remove the frequency meter from the front drum and place it on the rear drum and repeat the test. To adjust low frequency (3383 Hz) loosen the nut (Page 8001-12 of service manual –diagram) No (1) turn the screw (2) in or out (clockwise

or anti clockwise) correspondingly and tighten the nut (1). To adjust the high frequency (50 Hz) loosen the nut (3) turn to the screw (4) in or out (clock wise or anti clockwise) correspondingly and tighten the nut (3).

3.6 Change engine oil.

MAINTENANCE TASK (EVERY 200 OPERATING HOURS)

4.1 Carry out 10,50 and 100 operating hours maintenance tasks.

4.2 V-belt tension to be maintained between 10mm to 15mm.

4.3 Check blower V-belt warning system.

4.4 Replace oil filter element

4.5 Clean cooling fins of the engine and hydraulic oil coolers.

4.6 Below cooling air ducts with compressed air.

4.7 If contamination is oily, spray the engine with diesel oil or cold cleaning agent and clean with a water jet after an adequate soaking time.

4.8 Check oil level of vibration bearing shaft (point) and the exciter shaft (rear) of drums and in case oil to be drained, oil drain plug to be kept at the lowest point while draining and to keep it at the highest point while filling the chamber.

4.9 Clean drum bather hole in the cover under the Vibration motor

MAINTENANCE TASK (EVERY 500 OPERATING HOURS)

5.1 Carry out 10, 50,100 and 200 hrs maintenance tasks.

5.2 Clean fuel tank.

5.3 Check screw connections of air intake pipe, exhaust pipe, oil pan, engine mounting, air cleaner and elastic suspensions.

5.4 Check electric exciter circuit.

5.5 Check water sprinkling is done, by operating switch in the instrument panel. Water pump of water sprinkler is operated by solenoid valve operated electrically

MAINTENANCE TASK (EVERY 1000 OPERATING HOURS)

6.1 Carry out 10, 50, 100, 200 and 500 Hrs maintenance task.

6.2 Clean fuel pump strainer

6.3 Replace fuel filter.

6.4 Check valve clearance. The clearance should be as under:-

Exhaust (cold) - 0.254 mm (0.010 inch)

Intake (cold) - 0.508 mm (0.020 inch)

6.5 Change hydraulic oil.

6.6 Replace Hydraulic oil filter element.

6.7 Change oil in transfer case.